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article

Associations between care network types and psychological well-being among Dutch older adults

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This study examines the mechanisms underlying the association between care network types and psychological well-being. Care recipients in the 2015/16 wave of the Longitudinal Aging Study Amsterdam (N = 607) reported on the structural (size and composition) and functional features of care network types (satisfaction, feeling in control of care and care attitudes). Those in a mixed care network reported the highest depressive symptoms, while those in a spousal care network and a privately paid care network reported the lowest. The importance of being in control of care interacts with care network type on well-being. The results corroborate that both informal and formal caregivers need to help older persons to remain in control of care.

Key words formal care • informal care • depressive symptoms • Self-Determination Theory

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Introduction

Due to population ageing in many societies, the absolute number of health-impaired older persons is rising rapidly (WHO, 2015). As physical health and disability levels are the most important predictors of psychological well-being (George, 2010), an increasing number of persons may suffer from poor well-being in old age. Health impairment also triggers support and care from others, which may partly protect well-being in poor health conditions. In several studies, the social, emotional and instrumental support of a spouse, children or other close social network members has been shown to ease the negative impact of health problems on well-being (Wolff and Agree, 2004; Lin and Wu, 2011; Kwak et al, 2014). In contrast, a number of studies have found the use of formal home care, which is a resource for many in poor health, to be negatively associated with psychological well-being (Lee et al, 2013; Andersson and Monin, 2017; Pepin et al, 2017), and to maybe not buffer the effects of health on psychological well-being. The use of informal and formal care may thus have different, even contrasting, effects on psychological well-being in later life. More insight is needed into the underlying mechanisms of the associations between

particular care configurations and attempts to meet care recipients' needs. Due to policies of 'ageing in place' (WHO, 2015), this is all the more relevant as many older adults may receive help from both formal and informal caregivers in their own home for long periods of time.

Recent research has identified a variety of configurations of formal and informal caregivers supporting older care recipients, ranging from a small spouse-only care network to large mixed care networks (Fast et al, 2004; Broese van Groenou et al, 2016; Fret et al, 2017). Most such studies have focused on the determinants of these network types, showing, for example, that severe functional or cognitive impairments contribute to complex, mixed care network configurations (Li, 2004; Fret et al, 2017); however, a few have focused on the association between care network configurations and the well-being of care recipients. Care network size and the proportion of formal caregivers has been shown to be negatively associated with psychological well-being (Andersson and Monin (2017). This may be due to the fact that it is more difficult to coordinate and control care in large and complex care networks (Andersson and Monin (2017). Also, when there is no spouse or adult child available to help articulate specific needs and preferences, feelings of being dependent on non-kin or formal care may contribute to poor well-being among care recipients.

Issues of autonomy and self-determination are, in general, important dimensions of psychological well-being (Deci and Ryan, 2000); however, they are also often discussed in relation to the receipt of social support (Krause, 1997), as well as informal and formal care (Fine and Glendinning, 2005). Many qualitative studies (for a review, see Gregory et al, 2017) show that older adults value remaining in control of care decisions, even in cases of severe frailty, and wish to be treated with respect and dignity by formal caregivers. Regarding informal carers, ambivalence exists between needing their help and not wanting to burden their lives more than needed (Barken, 2017). Djundeva et al (2014) have also shown that a mismatch between parental expectations and support provided by adult children lowered the level of well-being. These findings suggest that the association between care use and psychological well-being may run via the mechanism of self-determination, reflecting (un)met needs regarding care provision, types of care relationship and being in control of care. This is one of the first studies to systematically examine how different care configurations affect psychological well-being.

Care network types

Home care is generally received from a mix of formal and informal caregivers, which may be configured in different ways. Following earlier research, a distinction is made between a spousal care network, a non-spousal 'informal care only' network, a mixed care network (with formal caregivers and non-spousal informal carers) and a privately paid care network (Broese van Groenou et al, 2016). We separated the care network with a spousal carer from the other types in order to examine whether the presence of a spousal carer is essential for psychological well-being, even when other informal and formal caregivers are present. We also separated the non-spousal informal care only network from the mixed care network in order to examine differences in well-being when having formal caregivers present (or not). Finally, we singled out the privately paid caregiver network in order to differentiate it from the other types of formal care network. In the Netherlands, formal care is publicly paid

care with eligibility rules based on difficulties in activities of daily living (Plaisier et al, 2017), in contrast with privately paid care, which is self-arranged care purchased on the market. Privately paid caregivers generally provide help with household tasks, whereas formal caregivers can assist with both personal care and household chores. These network types defined a priori may differ in composition from care network types derived from statistical classification analyses (for example, Fast et al, 2004; Fret et al, 2017); however, these analyses generally result in various types of mixed care networks, ranging from a larger informal to a larger formal care network type, which may blur the importance for well-being of having specific types of caregivers (for example, spouse, informal only or privately paid caregivers).

Theoretical framework

More refined distinctions of network types permit the examination of how the structural features of the care network (for example, size and composition) and functional features (for example, being satisfied with care and feeling in control of care) explain differences in psychological well-being among care recipients. Self-Determination Theory (SDT) (Deci and Ryan, 2000) is applied to explain differences in psychological well-being as it distinguishes three basic needs of psychological wellbeing – relatedness, autonomy and competence – which can be linked to the structural and functional features of care networks. Several previous studies have applied SDT in samples of nursing home residents (for example, Custers et al, 2012; Ferrand et al, 2014) and health care contexts (for example, Ng et al, 2012) but no studies were found that applied SDT in the context of home care use and well-being. This study is one of the first to empirically test basic needs as underlying mechanisms of this association.

Relatedness: network type and network structure

According to SDT, the need for relatedness captures the wish to interact with others, the ability to feel connected and the capacity to experience caring from and for others (Deci and Ryan, 2000). This concept applies, in particular, to interactions within close social relationships that are important for personal growth and well-being. The use of informal care, defined as receiving help from members of the social network (for example, spouse, children, other relatives, neighbours and friends), may particularly reflect feeling related to network members: one receives help from the other; one is in contact with others; and one feels oneself to be important to the other. Yet, the term 'informal carer' may be too general and may need further refinement to take account of the important differences between, and contributions made by, different constituent members of the network. For example, receiving care from the spouse is likely to contribute more to psychological well-being compared to receiving care from relatives and friends as it is, for many, the strongest relationship in the personal network (Fiori et al, 2007), suggesting a lower level of psychological well-being among care recipients with a non-spousal informal care only network compared to those with a spousal care network. In turn, compared to informal care provided by relatives and friends, one may feel less related to formal caregivers or privately paid caregivers. Formal care is often provided in teams with a high turnover of personnel, making it more difficult to develop strong relationships with most of the

individual caregivers. With privately paid caregivers, one is more likely to have a formal employer–employee relationship, which may not develop into a strong and important relationship. Assuming that the need for relatedness differs among types of caregivers, the four types of care networks may be differentially associated with psychological well-being. It is hypothesised that:

> H1: Depressive symptoms are lowest among care recipients in a spousal care network, followed by those with a non-spousal informal care only network, and highest among those with a mixed informal and formal care network and/or a privately paid only care network.

The specific types of caregivers present in the four types of care network also contribute to differences in size and composition. For example, a spousal care network and a privately paid care network are generally smaller in size than the larger informal and formal care network types (Jacobs et al, 2018). This raises the issue of what is more important for psychological well-being: network size (having many caregivers providing help) or network composition (having a relatively large number of caregivers with whom one feels strong connections). The sense of relatedness may be stronger in smaller care networks with relatively many informal carers as this increases the feeling of being supported and cared for. As mixed care is larger in size and composed of relatively fewer informal carers, this may lower the sense of relatedness in this type of care network and, in turn, the level of psychological well-being. The general hypothesis is that:

> H2: Differences in depressive symptoms among the four care network types are, in part, due to differences in size and proportion of informal and formal care.

Autonomy and competence: evaluation of and attitudes towards care use

Autonomy refers to being the perceived source of one's own behaviour, whereas competence indicates feeling effective in one's ongoing interactions with the social environment and experiencing opportunities to exercise and express one's capacities (Deci and Ryan, 2000). Lack of autonomy and competence may be reflected in the evaluation of the care used in three ways: one does not receive the care one needs; one does not feel in control of care; and/or one does not receive care in the way one prefers.

Unmet needs in care are strongly associated with psychological well-being (Ortero et al, 2003; Wolff and Agree, 2004). A difference between the type of help received and the type of help needed may result from care recipients' hesitance to ask for the care that they need; however, it may also arise from restrictions, on the side of the providers, to help out in the way that one prefers. Generally, the use of informal care (in particular, from spouses and adult children) lowers the level of unmet needs (Casado et al, 2011; Potter 2017), whereas the use of formal care increases the level of unmet needs (Li, 2006; Bien et al, 2013). Yet, Djundadeva et al (2014) showed that some parents reported receiving too little or too much help from adult children. For some, the use of formal care was not related to unmet need (Potter, 2017). Also, the use of privately paid care was associated with fewer unmet needs than the use of

publicly provided care (Rogero-García and Rosenberg, 2011), implying that paying for care oneself makes it easier to get the care that is needed. Based on these empirical studies, we formulate a general explanatory hypothesis:

> H3: Differences in depressive symptoms among the four care network types are, in part, due to differences in unmet needs.

Another explanation is that care use increases levels of dependency due to losing control over one's life, and over the care process in particular. This mechanism is suggested by many (Fine and Glendinning, 2005; Morgan and Brazda, 2013; Andersson and Monin (2017) but has not often been tested empirically. There is related evidence, for example, feeling that one is a burden to relatives contributes to a lower level of well-being (Cahill et al, 2009). There is also evidence which demonstrates that, in particular, the use of privately paid care increases a feeling of control over care, while publicly paid formal care use decreases feeling in control of care (Galvin, 2004; Rogero-García and Rosenberg, 2011; Potter, 2017), suggesting that paying for care overcomes issues of feeling dependent on caregivers and offers potentially more control over the service provided than being the passive receiver of care from a state-funded provider. The general hypothesis reads:

> H4: Differences in depressive symptoms among the four network types are, in part, due to differences in feeling in control of care.

A further hypothesis is that there may be a difference between the care realised and preferred. This may be the case for the type of caregiver as there are individual differences in attitudes and preferences regarding care source. Generally, spousal and other informal carers are preferred to formal caregivers (Cantor, 1979), though some studies have shown that older adults do not want to burden their relatives and prefer help from formal caregivers (Pinquart and Sörensen, 2002). Psychological well-being is hampered when support received is perceived as inadequate (for example, Wolff and Agree, 2004). The association between care network type and well-being may thus be particularly strong when there is a match between the source of care preferred and received. The general hypothesis reads:

> H5a: A spousal care network or informal care only network is particularly positively associated with well-being among those who have a positive attitude regarding informal care use.
> H5b: A mixed care network is particularly positively associated with well-being among those who have a positive attitude regarding formal care use.

The same may be argued for feelings of dependency: it can be a relief if one trusts others to arrange care and decides that being in control is not important (anymore); however, if one wants but is unable to be in control, this may hamper well-being (Ferrand et al, 2014). We argued earlier that the four care network types may differ in perceived control over care, which may explain differences in well-being between network types (H4). Here, we follow up on that hypothesis and argue that a strong desire to maintain control may foster well-being, particularly in network types in which staying in control is expected to be easier, as may be the case in a private care

network. If one feels no need to be in control, it may be less important for one's well-being who is providing the care. It is hypothesised that:

> H6: Differences in well-being among care network types depend on whether the care recipient values being (not) in control of care.

Controls

Health is strongly associated with the use of care (Andersen and Newman, 2005), psychological well-being (George, 2010), the report of unmet needs (Lima and Allen, 2001) and being less able to control or arrange one's care network (Jacobs et al, 2018). Other important factors related to care use and well-being are gender, age and socio-economic status (SES) (Andersen and Newman, 2005; George, 2010). We therefore control for health, gender, age and SES in the analyses.

Design and methods

Sample

Data are derived from the Longitudinal Aging Study Amsterdam (LASA), which is an ongoing longitudinal study focusing on physical, cognitive, psychological and social functioning in older age (Hoogendijk et al, 2016). Baseline interviews were carried out in 1992/93 among respondents aged 55–85 (N = 3,107) and followed up every three years. In 2002/03 and 2011/12, a new cohort aged 55–65 was added to the sample and included in follow-ups. For this study, we used data from the 2015/16 wave (n = 2,024) and selected those living independently in the community (n = 1,743) and receiving help with at least one of five types of support: household care; personal care; nursing care; transportation; and the arrangement of care and/or administration (n = 697). Due to missing values for important items, 607 respondents remained for analysis, of whom 62 per cent were women; the mean age was 75.2 years (sd = 9.5; range = 58–98).

Measurements

The dependent variable

Depressive symptoms indicate the level of *psychological well-being* and are measured by the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which uses 20 items covering depressive symptomatology experienced in the past week. Each answer is rated on a four-point scale, ranging from 0 'rarely or never' to 3 'mostly or always'. The total score of the 20 items ranges from 0 to 60, with higher scores indicating more depressive symptoms. A cut-off score of 16 is an indicator for clinically relevant depression (Beekman et al, 1997).

The care network: structural features

Respondents reported whether they received assistance with the five types of activities described earlier. If answered affirmative, they were asked to list the type

of caregiver for each activity. Informal carer types were the spouse, adult child, other relatives and non-kin. Formal caregivers were professional caregivers from a home care organisation or residential care organisation providing home help to community-dwelling older people. Privately paid caregivers were assigned to a separate category. Four dummy variables indicated whether or not care was provided by the spouse, other non-spousal informal carers, formal caregivers and privately paid caregivers. Based on these variables, we constructed a variable indicating *four exclusive types of care networks*: 1 = spousal care with or without other caregivers; 2 = non-spousal informal carers only; 3 = a mix of formal and non-spousal informal caregivers; and 4 = privately paid care only.

In addition, the respondent was asked to name the total number of informal carers and the total number of professional caregivers. The presence of a privately paid caregiver was assigned to be one person. The total calculated provided the indicator of the *size* of the total care network. By calculating the ratio of formal caregivers compared to informal carers, it was possible to derive an indicator of *composition*.

The care network: functional features

Unmet needs were assessed by presenting the following question: 'All things considered, is the amount of care received sufficient?' Answering categories were 'not sufficient', 'somewhat sufficient' and 'sufficient', which were recoded as 0 = not/somewhat sufficient and 1 = sufficient.

Feeling in control of care was assessed by presenting the following three questions: 'To what degree can you decide on: which type of help is provided/who provides types of help/the timing of the help provided?' Answering categories were 1 = 'I leave that entirely to others', 2 = 'I decide that myself to a certain degree' and 3 = 'I decide this myself'. The scores were summed and the sum score ranged from 3 = low level of control to 9 = highest level of control.

Care attitudes

Two items indicated the attitude regarding formal care: 'It's annoying to be dependent on professional agencies for help'; and 'Help from professional agencies is at the expense of your independence'. Respondents who (fully) disagreed with at least one statement were deemed to hold a *positive attitude towards formal care use* (0, 1). Two items indicated their attitude towards informal care: 'If you need temporary help, you should be able to ask your children, family or neighbours'; and 'If older adults need help for their personal care, they should be able to count on children, family or neighbours'. Respondents who (fully) agreed with at least one statement were deemed to hold a *positive attitude towards informal care* (0, 1). One item was used to assess the attitude towards being in control of care: 'To what degree do you think it is important to be in control of care?'. If answered '(very) important', they valued *control of care to be important* (1); answering 'not at all', 'not important or non-important' was coded '0'.

Control variables

Sex (0 = male; 1 = female), *age* in years and *level of education* (ranging from 1 = less than elementary school to 9 = university level) were used. Also, three indicators of *health*

were included: the number of chronic diseases (range = 0–7); the level of functional limitations, as calculated from experiencing difficulties with six items of daily living, with the sum score ranging from 6 = not able to perform all of these activities to 30 = no limitations; and the level of cognitive functioning, as indicated by the 30-item version of the Mini-Mental State Examination (MMSE, Folstein et al, 1975), ranging from 0–30, with higher scores indicating better cognitive functioning.

Procedure

Descriptives of all variables were provided and compared using Chi-square and F-tests, with post-hoc tests to explore the differences between pairs of network types (see Table 1). Next, bivariate Pearson correlations were provided for all variables under study to explore correlations between all variables (see Table 2). To test the hypotheses, multivariate regression analyses were conducted in five steps (see Table 3). Model 1 includes control variables and dummies for the four types of care networks, using the mixed care network as reference category (H1). Model 2 added total care network size and proportion of formal caregivers (H2). Model 3 added the indicators of unmet need (H3) and being in control (H4) to model 1. Next, attitudes towards formal and informal care use and the importance of being in control, as well as the three interaction effects with network type (H5a, H5b, H6), were added to model 3. Only the interaction effect of care network type and the importance of control was statistically significant (see Figure 1). Model 4 in Table 3 reveals the full model with this interaction effect included.

Results

Characteristics of care network types

The level of depressive symptoms was rather low on average (M = 9.43; see Table 1) given that a score of 16 on the CES-D indicates clinical depression (Beekman et al, 1997). Post-hoc tests revealed that depressive symptoms differed between all pairs except for the care recipients in a spousal care network and the non-spousal informal care only network. The largest difference was between those in a mixed care network (M = 12.01) and the private care network (M = 6.41).

Descriptive statistics illustrate the specific characteristics of each of the four network types (see Table 1). In the spousal care network (15 per cent), by definition, all respondents received help from the spouse, with some also receiving help from other informal, formal and privately paid caregivers in some cases. The average size was 1.94 caregivers, with a high percentage of informal caregivers (76 per cent). This network type was most prevalent among young females with relatively high levels of disability and a higher than average number of chronic diseases (75 per cent). The majority was satisfied with care (85 per cent) and positive regarding formal care (62 per cent), which was about average. This group was more positive towards informal care (52 per cent), felt less in control of care (M = 7.17) and felt control to be less important (76 per cent) than average. Their level of depressive symptoms was rather average.

The respondents with a non-spousal informal care only network (19 per cent) received care mostly from adult children (65 per cent) and to a lesser degree from

Table 1: Characteristics of care recipients and four types of care networks

	Spouse +/– other informal caregivers	No spouse, other informal CG only	No spouse, formal–informal mix	Privately paid only	Total sample	P	Post-hoc tests
N	89	114	198	206	607		
%	15	19	33	34	100		
Control variables							
% Female	75	72	61	51	62	0.00	b, c, d, e, f
Age (58–98)	72.20	76.80	80.00	71.00	75.20	0.00	a, b, d, e, f
Educational level (1–9)	4.20	3.80	4.00	5.90	4.63	0.00	c, e, f
Physical functioning (6–30)	22.90	26.10	23.70	28.80	25.70	0.00	a, c, d, e, f
Cognitive functioning (9–30)	27.70	27.30	26.80	28.60	27.60	0.00	b, c, e, f
No. of chronic diseases (0–6)	1.60	1.50	1.90	1.10	1.52	0.00	c, d, e, f
Care network features							
Total # of caregivers (1–23)	1.96	1.91	3.68	1.24	2.27	0.00	b, c, d, e, f
% Informal caregivers (0–1)	0.76	0.73	0.30	0.18	0.41	0.00	b, c, d, e, f
% Formal caregivers (0–1)	0.10	0.00	0.48	0.03	0.18	0.00	a, b, c, d, f
Help from 1+ adult child (%)	15	65	30	0	24	0.00	a, b, c, d, e, f
Help from 1+ relative (%)	4	29	13	0	11	0.00	a, b, d, e, f
Help from 1+ non-kin (%)	5	20	10	0	8	0.00	a, d, e, f
Help from 1+ formal caregiver (%)	17	0	100	0	35	0.00	a, b, c, d, e
Help from private caregiver (%)	21	26	23	100	50	0.00	c, e, f
Care evaluation							
% Satisfied	85	84	79	94	86	0.00	c, e, f
Control over care (3–9 = high)	7.17	7.44	6.53	8.41	7.40	0.00	b, c, d, e, f
Care attitudes							
Positive attitude formal care (% yes)	62	59	66	63	63	0.62	
Positive attitude informal care (% yes)	52	55	40	49	48	0.06	d
Control important (% yes)	76.00	88.00	84.00	95.00	88.00	0.00	a, c, e, f
Psychological well-being							
Depressive symptoms (0–38)	10.11	9.89	12.01	6.41	9.43	0.00	b, c, d, e, f

Notes: Post-hoc tests $p < 0.05$: [a] spousal care versus non-spousal informal care; [b] spousal care versus mixed care; [c] spousal care versus private care; [d] non-spousal informal versus mixed care; [e] non-spousal informal versus private; [f] mixed versus private care.

relatives (30 per cent), non-kin (20 per cent) or a privately paid caregiver (26 per cent). Compared to the spousal care network, network size was about the same (M = 1.9). This network type was also more often found among females, though females of higher age, with lower levels of education and with better physical abilities compared to those in the spousal network. These respondents revealed average levels of care satisfaction, being in control of care, care attitudes, valuing control as important and depressive symptoms.

The respondents with a mixed care network (33 per cent) had the largest size of care network (M = 3.2 caregivers) in which everyone received formal care in addition to care from children (30 per cent), relatives (13 per cent), non-kin (10 per cent) or a private caregiver (23 per cent). The majority of respondents with this network type were women (61 per cent). They were of relatively high age and had lower levels of education than average, and they reported more health problems than average. A minority (40 per cent) reported a positive attitude to informal care use. This group was the least satisfied with the care received, experienced the lowest level of control over care and reported the highest level of depressive symptoms.

Finally, in the privately paid care network (34 per cent), there were no other types of caregivers, which contributed to the lowest network size (M = 1.2). This care network type was most often found among younger, higher-educated and more healthy respondents, and was found to be the network type most likely to be adopted by males in this study. Almost all respondents reported that being in control was very important (95 per cent) and that sufficient care was received (94 per cent). About half of these respondents (49 per cent) had a positive attitude towards informal care use. On average, control over care was the highest and depressive symptoms were the lowest for this group.

Post-hoc tests revealed that there were very few differences between the spousal care network and the non-spousal informal care network in the structural and functional features of the care network. The exception was that respondents within a spousal care network who were younger and more physically impaired felt it less important to remain in control over care. Minimal differences were found in care attitudes between the four network types. Those with a private care network differed from the other three network groups on almost all variables except care attitudes.

Multivariate analyses

Model 1 (Table 3) shows that, when adjusted for health and background variables, the spousal care network and the privately paid care network reported significantly lower levels of depressive symptoms compared to the mixed care network. The difference with the non-spousal informal care only network was smaller and only significant at the 10 per cent level. Hypothesis 1 is only partly supported as those with a mixed care network did show the lowest level of well-being but, in contrast to what was expected, those with a privately paid care network showed the highest level of well-being.

Model 2 added network size and the proportion of formal caregivers to the analysis, which did not change the coefficients of the care network types (rejecting hypothesis 2). Although both the size and proportion of formal caregivers are bivariately significantly correlated with depressive symptoms ($r = 0.14$, $p < 0.01$ and $r = 0.20$, $p < 0.01$,

Table 2: Bivariate Pearson correlations between all study variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Sex (M, F)	1																	
2	Age (58–98)	.065	1																
3	Education (1–9)	**–.189**	**–.251**	1															
4	IADL (6–30)	**–.155**	**–.274**	**.272**	1														
5	MMSE (9–30)	–.017	**–.274**	**.378**	**.286**	1													
6	# Chronic diseases (0–7)	**.084**	**.237**	**–.160**	**–.331**	**–.130**	1												
7	Spousal care network (0, 1)	**.116**	**–.131**	**–.084**	**–.237**	.009	.039	1											
8	Informal care network (0, 1)	**.102**	**.081**	**–.191**	.035	–.073	–.001	**–.199**	1										
9	Private care network (0, 1)	**–.157**	**–.315**	**.423**	**.429**	**.285**	**–.244**	**–.297**	**–.345**	1									
10	Mixed care network (0, 1)	–.014	**.350**	**–.205**	**–.284**	**–.234**	**.218**	**–.288**	**–.335**	**–.499**	1								
11	Total # of caregivers (1–23)	–.003	**.215**	**–.133**	**–.409**	**–.146**	**.193**	–.045	–.060	**–.259**	**.345**	1							
12	% Formal caregivers (0–1)	–.010	**.271**	**–.184**	**–.312**	**–.207**	**.166**	**–.102**	**–.254**	**–.320**	**.612**	**.370**	1						
13	Satisfied with care (0, 1)	–.061	**–.086**	**.113**	**.240**	**.113**	**–.156**	–.009	–.027	**.166**	**–.138**	**–.116**	**–.187**	1					
14	Control over care (3–9)	.034	**–.327**	**.267**	**.318**	**.274**	**–.159**	–.061	.001	**.384**	**–.343**	**–.346**	**–.368**	**.124**	1				
15	Positive re formal care (0, 1)	.021	.003	.033	.069	.064	–.004	–.011	–.043	.000	.044	.008	.032	–.020	**–.010**	1			
16	Positive re informal care (0, 1)	**–.116**	.021	.037	**.080**	**.101**	–.071	.034	.074	.013	**–.100**	–.024	**–.105**	.048	.037	.045	1		
17	Control is important (0, 1)	.012	**–.136**	**.145**	.068	.055	.031	**–.127**	.001	**.163**	–.070	–.070	–.062	–.049	**.424**	–.007	–.023	1	
18	Depressive symptoms (0–38)	**.207**	**.117**	**–.231**	**–.379**	**–.215**	**.243**	.038	.029	**–.292**	**.242**	**.136**	**.199**	**–.236**	**–.165**	**–.130**	**–.120**	.011	1

Notes: $N = 607$. Bold = $p < 0.05$.

Table 3: Regression of care network types, structural and functional network features and controls on depressive symptoms

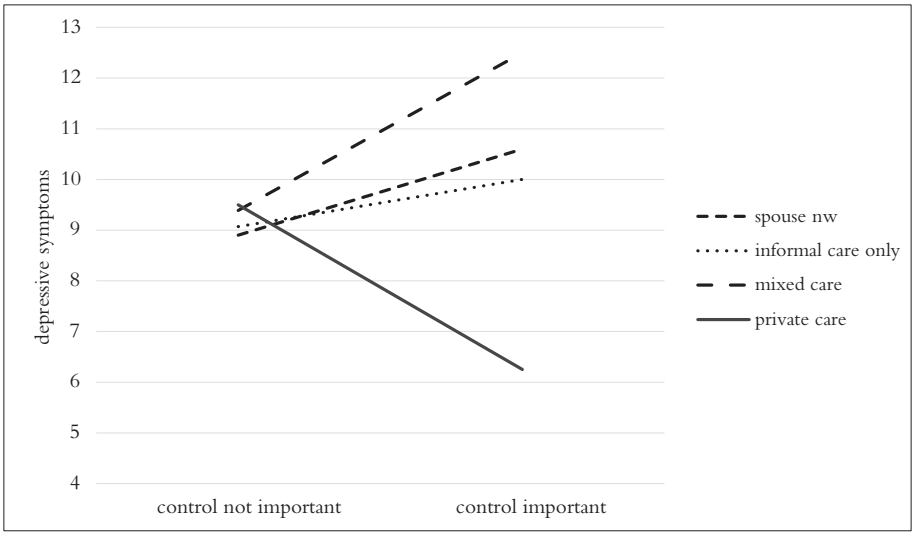
	Model 1		Model 2		Model 3		Model 4	
Care network type	β	p	β	p	β	p	β	p
Spousal care network	–0.13	0.00	–0.13	0.01	–0.12	0.00	0.01	0.96
Non-spousal informal caregiver only network	–0.07	0.09	–0.07	0.18	–0.07	0.10	0.05	0.64
Privately paid care network	–0.18	0.00	–0.17	0.02	–0.17	0.01	0.18	0.26
Mixed care network (ref)								
Size and composition								
Total size			–0.07	0.12			–0.06	0.13
% Of formal caregivers			0.03	0.51			0.01	0.88
Evaluation of care								
Being satisfied (no, yes)					–0.12	0.00	–0.11	0.00
Being in control (3–9)					0.00	0.99	–0.03	0.50
Attitudes to care								
Positive re formal care							–0.11	0.02
Positive re informal care							–0.05	0.20
Control over care is important							–0.13	0.17
Interaction effect								
Spousal care ∗ importance control							0.12	0.29
Informal care only ∗ importance control							0.16	0.26
Private care ∗ importance control							0.36	0.02
Control variables								
Sex (M, F)	0.15	0.00	0.14	0.00	0.14	0.00	0.14	0.00
Age (58–98)	–0.09	0.03	–0.09	0.03	–0.08	0.05	–0.08	0.07
Education (1–9)	–0.06	0.18	–0.06	0.19	–0.06	0.18	–0.05	0.26
Physical functioning (6–30)	–0.26	0.00	–0.28	0.00	–0.24	0.00	–0.25	0.00
Cognitive functioning (9–30)	–0.08	0.05	–0.08	0.05	–0.08	0.06	–0.06	0.14
No. of chronic diseases (0–6)	0.11	0.01	0.11	0.01	0.10	0.01	0.10	0.01
R^2	0.21		0.21		0.22		0.26	

Note: *N* = 607.

respectively; see Table 2), these effects failed to reach significance in the subsequent multivariate analyses.

Model 3 added the two evaluations of care to the model, which did not change the coefficients of the network types, rejecting both hypotheses 3 and 4. Nevertheless, perceiving the care as insufficient was directly associated with higher depressive symptoms. Perceiving being in control of care is only negatively associated with depressive symptoms in the bivariate correlation ($r = –0.17, p < 0.01$; see Table 2) but lost statistical significance in the multivariate analysis ($r = 0.00, p = 0.99$). In part, this was due to the strong positive correlation with the private care network ($r = 0.38, p$

Figure 1: Mean depressive symptoms by importance of being in control of care for four care network types



< 0.01) and the strong negative correlation with the mixed care network type ($r = -0.34$, $p < 0.01$), which suppressed the effect of control on depressive symptoms in the multivariate analysis.

Finally, model 4 in Table 3 shows that the importance attached to being in control of care was associated with depressive symptoms, and more so among those with a private network type (versus a mixed network type, beta = 0.36, $p < 0.02$), supporting hypothesis 6. Stratified analyses shows that among those who do not value being in control, there was no difference in the average depressive symptoms among the four network types (F = 0.03, $p = 0.99$, $N = 75$), whereas the differences were significant among those who do value being in control (F = 24.29, $p = 0.00$, $N = 532$). Figure 1 reveals how being in a private care network and valuing control as important contributed to lower depressive symptoms (M = 6.25), while being in a mixed care network and valuing control as important contributed to higher depressive symptoms (M = 12.5). For those with a spousal or informal care only network type, the association between depressive symptoms and valuing being in control as important is non-significant ($r = 0.09$, $p > 0.10$ and $r = 0.05$, $p = 0.59$, respectively). The final model also reveals that being unsatisfied with care and having a negative attitude towards formal care use were negatively associated with depressive symptoms.

Discussion

This study examined differences in psychological well-being among care recipients in four care network types defined a priori, as well as to what degree these differences were explained by features of care networks and care recipients. The findings allow for three conclusions: (1) in addition to health and background variables, the type of care network directly impacted the level of depressive symptoms of the care recipient; (2) depressive symptoms were the highest among those with a mixed care network and lowest among those with a privately paid care network, in particular, when they

considered control over care to be important; and (3) unmet needs and a negative attitude towards formal care use were strongly associated with depressive symptoms.

The SDT suggests that all three basic needs (relatedness, autonomy and competence) must be fulfilled in order to obtain a high level of psychological well-being. Upon applying these basic needs to a context of care-receiving, our findings question the importance of relatedness to care recipients' well-being. Depressive symptoms were average in the spousal and non-spousal informal care only network (which we assumed to reflect strong levels of relatedness), and lowest in the private care network (which we assumed to reflect the lowest levels of relatedness). One explanation could be that receiving help from informal carers may contribute to feelings of ambivalence, in particular, for those who do not want to burden their relatives or friends with care obligations. However, we found no evidence that the combination of having an informal care network and a positive attitude towards informal care was of any importance to care recipients' well-being. Another explanation is that the bond with many of the informal carers may not be as strong as expected, or may at least vary among types of informal carers. This suggests that receiving care from a spouse or other informal carer may not have a strong direct effect on well-being and, more importantly, that informal care should not be used as a proxy for relatedness. More detailed information that indicates aspects of relatedness, for example, the quality of relationships with the spouse, kin and non-kin, and also with formal and privately paid caregivers, should shed more light on how the concept of relatedness works in the context of care.

Our findings provide more support for the assumption that upholding autonomy and competence in the care situation is important for the care recipients' well-being. In particular, our findings highlight the sharp distinction in psychological well-being between those in a mixed care network and those in a privately paid care network. The latter works best in terms of being satisfied with the care received and feeling in control of care, and almost all respondents in this network type felt it important to be in control of care. Clearly, these two networks reflect two very different care contexts: those with a privately paid care network tended to be younger, still in good health and able to afford assistance with household or administrative chores; and those with a mixed care network tended to be older and in poor health, and to have been in need of care for many years. The findings reveal that using care from multiple types of caregivers, possibly over a long period of time, lowered care satisfaction and feeling in control of care, and that this clearly hampered care recipients' well-being, especially for those who considered being in control of care to be important. These findings have important implications for practice. Formal caregivers may need to use their time in the household of the care recipient to discuss issues of dependency, care preferences and feeling in control. This requires that formal home care professionals have more time to visit care recipients and more flexibility to arrange their own schedules of care provision. Yet, it is exactly these limitations in the work schedules of formal caregivers that limit the autonomy of the care recipient.

Andersson and Monin (2017) showed that care network size and the proportion of formal caregivers were significantly associated with psychological well-being. This study adds to earlier findings by demonstrating how structural features are less important for care recipients' well-being than a negative attitude towards formal care, receiving insufficient care and not feeling in control of care when control is valued. This corroborates evidence that, in particular, attitudes towards and evaluations of care

configurations reflect basic needs of psychological well-being. If the care received does not live up to expectations, this lowers the level of well-being. As care expectations are highly gendered (for example, men have higher expectations of informal care than women; see Table 2), it may also be that relying on a spouse and/or other informal carers differs for women and men when in poor health. Future research may focus on how gender interplays with the associations among care configurations, care attitudes and evaluations, and care recipients' psychological well-being.

This study contains several strengths, but there are some limitations to note. A first limitation is that our sample selection will have affected the prevalence of the four network types. The selection also included respondents who received assistance with household care or administrative tasks only, which are both tasks that are likely to be outsourced to the market. The need for these types of help is not strictly driven by health problems and may have contributed to the relatively large proportion of our sample with privately paid care only and few health problems. The fact that only 35 per cent of our sample used formal care (see Table 1) may also account for the relatively low levels of depressive symptoms in our sample. Studies using samples of formal home care users only report higher average scores on the CES-D scale and calculated that about half of the sample risked sub-threshold or major depression (Lee et al, 2013). Our findings corroborate that poor well-being is especially an issue for formal home care recipients. Also, the prevalence of network types and poor well-being among care recipients may differ in other countries, partly because of cross-national differences in social networks that affect informal care provision (for example, Antonucci and Wexler, 2019), and partly because of national differences in family expectations and formal care systems that affect formal care use (for example, Haberkern and Szydlik, 2010). The Dutch care system allocates publicly paid care rather generously, including household care, which may have contributed to the relatively large share of respondents with a mixed care network (33 per cent). Using the same a priori care network types for specific care types (for example, personal care only) or in countries with a more restrictive formal care system may show a different distribution of care network types. A further limitation is that this cross-sectional study offers only a snapshot of a care context, which largely depends on the severity of the health impairments. Longitudinal studies have shown changes in care configurations over time that contain both substitution and complementarity between informal and formal caregivers (for example, Li, 2005; Allen et al, 2012; Spillman et al, 2019). This raises questions regarding the onset and fulfilment of unmet needs, the onset and decline of feeling in control, and so on. Longitudinal studies are required to examine how changes in care network types, attitudes and evaluations impact on each other and on psychological well-being. Another limitation concerns the use of a general one-item indicator of unmet needs instead of a more comprehensive measure that specifies what type of help is lacking (for example, Potter, 2017). This may have given more insight into how informal and formal care may supplement or complement each other on care tasks, as well as to what degree these specific needs of help impact well-being differently. Nevertheless, Bauld et al (2000) have argued that the use of a general indicator of unmet needs also gives an impression of the overall lack of care, which was an important ingredient of well-being in our study.

To conclude, although care configurations are important, this study revealed that care attitudes and evaluations are also pivotal to the psychological well-being of older care recipients. In particular, receiving sufficient care and remaining in control of care

helps older care recipients to maintain a higher level of psychological well-being. The findings have implications for policy and practice in terms of ensuring that the provision of informal and formal care is better adapted to the expectations of care recipients and helps them to remain in control of care.

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Conflict of interest

The author declares that there is no conflict of interest.

References

Allen, S.M., Lima, J.C., Goldscheider, F.K. and Roy, J. (2012) Primary caregiver characteristics and transitions in community-based care, *Journal of Gerontology: Social Sciences*, 67(3): 362–71. doi: 10.1093/geronb/gbs032

Andersen, R. and Newman, J.F. (2005) Societal and individual determinants of medical care utilization in the United States, *Milbank Quarterly*, 83(4): online.: https://onlinelibrary.wiley.com/toc/14680009/2005/83/4

Andersson, M.A. and Monin, J.K. (2017) Informal care networks in the context of multimorbidity: size, composition and associations with recipient psychological wellbeing, *Journal of Aging and Health*, 30(4): 641–64. doi: 10.1177/0898264316687623

Antonucci, T.C. and Wexler, C.W. (2019) Applying the convoy model to support in care situations, *International Journal of Care and Caring*, 3(1): 23–38. doi: 10.1332/239788219X15492857438483

Barken, R. (2017) Reconciling tensions: needing formal and family/friend care but feeling like a burden, *Canadian Journal of Aging*, 36(1): 81–96. doi: 10.1017/S0714980816000672

Bauld, L., Chesterman, J. and Judge, K. (2000) Measuring satisfaction with social care amongst older service users: issues from the literature, *Health and Social Care in the Community*, 8(5): 316–24. doi: 10.1046/j.1365-2524.2000.00256.x

Beekman, A.T., Deeg, D.J.H., Van Limbeek, J., Braam, A.W., De Vries, M.Z. and Van Tilburg, W. (1997) Criterion validity of the Center for Epidemiologic Studies Depression scale (CES-D): results from a community-based sample of older subjects in The Netherlands, *Psychological Medicine*, 27(1): 231–5. doi: 10.1017/S0033291796003510

Bien, B., McKee, K.J., Döhner, H., Triantafillou, J., Lamura, G., Doroszkiewicz, H., Krevers, B. and Kofahl, C. (2013) Disabled older people's use of health and social care services and their unmet care needs in six European countries, *European Journal of Public Health*, 23(6): 1032–8. doi: 10.1093/eurpub/cks190

Broese van Groenou, M.I., Jacobs, M.T., Zwart-Olde, N.E. and Deeg, D.J.H. (2016) Mixed care networks of community-dwelling older adults with physical health impairments in the Netherlands, *Health and Social Care in the Community*, 24(1): 95–104. doi: 10.1111/hsc.12199

Cahill, E., Lewis, L.M., Barg, F.K. and Bogner, H.R. (2009) You don't want to burden them: older adults' views on family involvement in care, *Journal of Family Nursing*, 15(3): 295–317. doi: 10.1177/1074840709337247

Cantor, M.H. (1979) Neighbors and friends: an overlooked resource in the informal support system, *Research on Aging*, 1(4): 434–63. doi: 10.1177/016402757914002

Casado, B.L., van Vulpen, K.S. and Davis, S.L. (2011) Unmet needs for home and community-based services among frail older Americans and their caregivers, *Journal of Aging and Health*, 23(3): 529–53. doi: 10.1177/0898264310387132

Custers, A.F.J., Westerhof, G.J., Kuin, Y., Gerritsen, D.L. and Riksen-Walraven, J.M. (2012) Relatedness, autonomy, and competence in the caring relationship: the perspective of nursing home residents, *Journal of Aging Studies*, 26(3): 319–26. doi: 10.1016/j.jaging.2012.02.005

Deci, E.L. and Ryan, R.M. (2000) The 'what' and 'why' of goal pursuits: human needs and the self-determination of behavior, *Psychological Inquiry*, 11(4): 227–68. doi: 10.1207/S15327965PLI1104_01

Djundeva, M., Mills, M., Wittek, R. and Steverink, N. (2014) Receiving instrumental support in late parent–child relationships and parental depression, *Journal of Gerontological Sciences: Social Sciences*, 70(6): 981–94. doi: 10.1093/geronb/gbu136

Fast, J., Keating, N.C., Derksen, L. and Otfinowski, P. (2004) Characteristics of family/friend care networks of frail seniors, *Canadian Journal on Aging*, 23(1): 5–19. doi: 10.1017/S0714980800016780

Ferrand, C., Martinent, G. and Durmaz, N. (2014) Psychological need satisfaction and well-being in adults aged 80 years and older living in residential homes: using a self-determination theory perspective, *Journal of Aging Studies*, 30: 104–11. doi: 10.1016/j.jaging.2014.04.004

Fine, M. and Glendinning, C. (2005) Dependence, independence or inter-dependence? Revisiting the concepts of care and dependency, *Ageing and Society*, 25(4): 601–22. doi: 10.1017/S0144686X05003600

Fiori, K.L., Smith, J. and Antonucci, T.C. (2007) Social network types among older adults: a multidimensional approach, *The Journals of Gerontology*, 62(6): 322–30. doi: 10.1093/geronb/62.6.P322

Folstein, M.F., Folstein, S.E. and McHugh, P.R. (1975) Mini-mental state: A practical method for grading the cognitive state of patients for the clinician, *Journal of Psychiatric Research*, 12(3): 189–198. doi: 10.1016/0022-3956(75)90026-6

Fret, B., Lambotte, D., Van Regenmortel, S., Dury, S., De Witte, N., Dierckx, E., De Donder, L. and Verté, D. (2017) Socio-demographic, socio-economic and health need differences between types of care use in community-dwelling older adults, *International Journal of Care and Caring*, 1(3): 351–66. doi: 10.1332/239788217X15027193795897

Galvin, R. (2004) Challenging the need for gratitude: Comparisons between paid and unpaid care for disabled people, *TJournal of Sociology*, 40(2): 137–155. doi: 10.1177/1440783304043453

George, L.K. (2010) Still happy after all these years: research frontiers on subjective well-being in later life, *The Journals of Gerontology: Social Sciences*, 65B(3): 331–9. doi: 10.1093/geronb/gbq006

Gregory, A., Mackintosh, S., Kumar, S. and Grech, C. (2017) Experiences of health care for older people who need support to live at home: a systematic review of the qualitative literature, *Geriatric Nursing*, 38(4): 315–24. doi: 10.1016/j.gerinurse.2016.12.001

Haberkern, K. and Szydlik, M. (2010) State care provision, societal opinion and children's care of older parents in 11 European countries, *Ageing and Society*, 30(2): 299–323. doi: 10.1017/S0144686X09990316

Hoogendijk, E.O., Deeg, D.J.H., de Breij, S., Klokgieters, S.S., Kok, A.A.L., Stringa, N., Timmermans, E.J., an Schoor, N.M., van Zutphen, E.M., van der Horst, M., Poppelaars, J., Malhoe, P. and Huisman, M. (2016) The Longitudinal Aging Study Amsterdam: cohort update 2016 and major findings, *European Journal of Epidemiology*, 31(9): 927–45. doi: 10.1007/s10654-016-0192-0

Jacobs, M.T., Aartsen, M.J., Deeg, D.J.H. and Broese Van Groenou, M.I. (2018) Diversity in older adults' care networks: the added value of individual beliefs and social network proximity, *Journals of Gerontology: Social Sciences*, 73(2): 326–36. doi: 10.1093/geronb/gbw012

Krause, N. (1997) Social support and feelings of personal control in later life, in G.R. Pierce, B. Lakey, I.G. Sarason and B.R. Sarason (eds) *Sourcebook of Social Support*, New York, NY: Plenum Press, pp 335–68.

Kwak, M., Ingersoll-Dayton, B. and Burgard, S. (2014) Receipt of care and depressive symptoms in later life: the importance of self-perceptions of aging, *The Journals of Gerontology: Series B*, 69(2): 325–35. doi: 10.1093/geronb/gbt128

Lee, M.J., Hasche, L.K., Sunha Choi, S., Proctor, E.K. and Morrow-Howell, N. (2013) Comparison of major depressive disorder and subthreshold depression among older adults in community long-term care, *Aging & Mental Health*, 17(4): 461–9.

Li, H. (2006) Involvement of informal and formal service providers: meeting the home care needs of older adults with severe functional impairments, *Home Health Care Service Quarterly*, 25(3/4): 167–83. doi: 10.1300/J027v25n03_10

Li, L.W. (2004) Caregiving network compositions and use of supportive services by community-dwelling dependent elders, *Journal of Gerontological Social Work*, 43(2/3): 147–64. doi: 10.1300/J083v43n02_10

Li, L.W. (2005) Longitudinal changes in the amount of informal care among publicly paid home care recipients, *The Gerontologist*, 45(4): 465–73. doi: 10.1093/geront/45.4.465

Lima, J.C. and Allen, S.M. (2001) Targeting risk for unmet need: Not enough help versus no help at all, *The Journals of Gerontology: Series B*, 56(5): S302–S310. doi: https://doi.org/10.1093/geronb/56.5.S302

Lin, I.-F. and Wu, H.-S. (2011) Does informal care attenuate the cycle of ADL/IADL disability and depressive symptoms in late life?, *The Journals of Gerontology: Social Sciences*, 66B(5): 585–94. doi: 10.1093/geronb/gbr060

Morgan, L.A. and Brazda, M.A. (2013) Family support and diminished control in older adults: the role of proxy control, *Journal of Applied Gerontology*, 32(6): 651–68. doi: 10.1177/0733464813494568

Ng, J.Y.Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E.L., Ryan, R.M., Duda, J.L. and Williams, G.C. (2012) Self-determination theory applied to health contexts: a meta-analysis, *Perspectives on Psychological Science*, 7(4): 325–40. doi: 10.1177/1745691612447309

Otero, A., de Yébenes, M.J., Rodríguez-Laso, A. and Zunzunegui, M.V. (2003) Unmet home care needs among community-dwelling elderly people in Spain, *Aging Clinical Experimental Research*, 15(3): 234–42. doi: 10.1007/BF03324504

Pepin, R., Leggett, A., Sonnega, A. and Assari, S. (2017) Depressive symptoms in recipients of home- and community-based services in the United States: are older adults receiving the care they need?, *American Journal of Geriatric Psychiatry*, 25(12): 1351–60. doi: 10.1016/j.jagp.2017.05.021

Pinquart, M. and Sörensen, S. (2002) Older adults' preferences for informal, formal, and mixed support for future care needs: a comparison of Germany and the United States, *International Journal of Aging and Human Development*, 54(4): 291–314. doi: 10.2190/1FVT-24T3-Y1V3-57A5

Plaisier, I., Verbeek-Oudijk, D. and De Klerk, M. (2017) Developments in home-care use. Policy and changing community-based care use by independent community-dwelling adults in the Netherlands, *Health Policy*, 121(1): 82–9. doi: 10.1016/j.healthpol.2016.11.006

Potter, A.J. (2017) Care configurations and unmet care needs in older men and women, *Journal of Applied Gerontology*, 38(10): 1351–70. doi: 10.1177/0733464817733239

Radloff, L.S. (1977) The CES-D Scale: A self-report depression scale for research in the general population, *Applied Psychological Measurement*, 1(3): 385–401. doi: 10.1177/014662167700100306

Rogero-García, J. and Rosenberg, M.W. (2011) Paid and unpaid support received by co-resident informal caregivers attending to community-dwelling older adults in Spain, *European Journal of Ageing*, 8(2): 95–107.

Spillman, B.C., Freedman, V.A., Kasper, J.D. and Wolff, J.L. (2019) Change over time in caregiving networks for older adults with and without dementia, *The Journals of Gerontology: Series B*, doi: 10.1093/geronb/gbz065 .

WHO (World Health Organization) (2015) *World Report on Ageing and Health*, Geneva, Switzerland: World Health Organization, www.who.int/ageing/events/world-report-2015-launch/en/

Wolff, J.L. and Agree, E.M. (2004) Depression among recipients of informal care: the effects of reciprocity, respect and adequacy of support, *The Journals of Gerontology: Series B*, 59(3): S173–80. doi: 10.1093/geronb/59.3.S173